Responsiveness Summary
(Updated June 13, 2013)

Tuscarora Township Wastewater Treatment Facility
Groundwater Discharge Permit No. GW1810271

The draft Groundwater Discharge permit for the Tuscarora Township Wastewater Treatment Facility was placed on public notice from March 15 to April 26, 2013, which included an 11-day extension for additional comments to be submitted. Following the public notice, the Department of Environmental Quality (DEQ) reviewed the written and oral statements that were provided on the draft Groundwater Discharge permit and issued a Responsiveness Summary. Citizens were invited to discuss any additional concerns with representatives from the DEQ and the Township Board at a Public Meeting held May 29, 2013, from 7:00 p.m.-9:00 p.m. at the Inland Lakes Middle School Gym, 4363 South Straits Highway, Indian River, Michigan.

Below is some general information on the Groundwater Program and an update of the Responsiveness Summary, which includes comments received during the public notice period as well as the public meeting. In preparing this summary, actual comment language may have been abbreviated, paraphrased, and/or edited for clarity. Responses from DEQ Water Resources Division staff follow each of the bulleted comments.

General Information

The Groundwater Program regulates discharges to groundwater under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451 (NREPA) and the Part 22 Groundwater Quality Rules R323.2201 – R323.2240 (hereafter referred to as the Part 22 Rules). Groundwater staff reviews applications for authorizations to discharge wastewaters to the ground or groundwater of the state. Upon completion of an application review, staff makes recommendations leading to the determination of issuance or denial of an authorization to discharge. If a permit is issued, staff recommends appropriate effluent and groundwater limits for various parameters in accordance with the Part 22 Rules.

Once a Groundwater Discharge permit is issued, field staff reviews effluent and groundwater sampling data. Field staff also inspects discharge facilities to ensure legal requirements are being met. Field staff reviews and issues permits for the construction of public sewerage systems under Part 41, Sewerage Systems, (324.4101 – 324.4111) of the NREPA.

The issuance of a Groundwater Discharge permit does not authorize violation of any federal, state or local laws or regulations, nor does it obviate the necessity of obtaining such permits, including any other DEQ permits, or approvals from other units of government as may be required by law.

Frequently Used Acronyms in this Document

- DEQ – Department of Environmental Quality
- NREPA – Natural Resources and Environmental Protection Act
- SSO – Sanitary sewer overflow
- WWTF – Wastewater treatment facility

Permit Application Review Process and Permit Draft

- *What is the length of the permit review period?*

  Permit reviews may last up to 180 days from the day a complete application is received. Though the Tuscarora Township WWTF application was received over 180 days ago, the application was not complete at that time. At various times in the review process, the application has been on hold to address deficiencies in the application. The total review time for the application falls within the 180 day review period.

- *Who checks the permit application answers to make sure they are correct?*

  When the DEQ receives an application for a groundwater discharge permit, all information in the application is reviewed. Some information is verifiable from a separate source (such as whether a discharge is located in a wellhead protection area). However, some information comes from studies conducted by the applicant and/or their consultants. This information is reviewed by DEQ experts, who use their knowledge to determine whether the information submitted is reasonable. If any information is suspect, the DEQ will raise their concerns with the applicant until their questions are answered. At this time, the DEQ is satisfied with the information submitted by the applicant in support of the Tuscarora Township WWTF.

- *What is meant when the permit says the discharge cannot cause nuisance conditions? What does that include?*

  Nuisance conditions are defined in the Part 22 Rules under R323.2202(c). It states: "nuisance conditions means conditions that cause a substantial unreasonable interference with another person(s) use or enjoyment of the person's property, including but not limited to, interference caused by any of the following: odors, vectors, noise, pathogens, or changes in the aesthetic qualities of groundwater."

- *Who reviews these permit applications? Is it the same people all of the time?*

  The Groundwater Discharge Permit applications are reviewed by staff in the Groundwater Permits Unit as well as field staff in the District Offices. The State is divided into different districts and staff is assigned to one or more districts. Staff then reviews applications and makes recommendations on permits for facilities within the assigned districts. Tuscarora Township is located in the Gaylord District.

- *I am concerned that the DEQ does not have jurisdiction over navigable waterways, which belongs to the Army Corps of Engineers, or over construction under I-75. What gives you the jurisdiction to issue this permit?*

  Michigan assumed the authority to administer Section 404 of the federal Clean Water Act in 1984, becoming the first state to do so. The Army Corps has exclusive permitting authority in 48 other states (New Jersey is the only other state with primacy). In Michigan, the Army Corps holds joint jurisdiction with the State of Michigan over

Section 10 for navigable waters of the United States (e.g., the Great Lakes, Lake Charlevoix, etc.) south of M-68. Jurisdiction north of M-68 is held by Michigan alone.

Despite joint jurisdiction over the Sturgeon River, the construction occurring under the Sturgeon River is exempt from a permit because the township is proposing to use directional drilling to install the sewer pipe at a depth greater than 10 feet below the streambed.

Obtaining a Groundwater Discharge Permit and a Part 41 Construction permit does not exempt the facility from obtaining all other necessary permits from any local, state, or federal government entity.

- *What environmental studies/reviews have been done to evaluate this proposed discharge?*

  The site was originally investigated for use as a WWTF and discharge location in 1998 and a Hydrogeological Report was prepared at that time. Additional work was completed in 2012. A total of six monitor wells and two additional soils borings were completed at the site. The objective of the studies was to characterize the soil and groundwater conditions of the site. The studies have been reviewed and found to have satisfied the requirements of Rule 2221 of the Part 22 Rules.

- *Did the township evaluate any alternatives to the proposed system? If not, why not?*

  Rule 323.2218(3)(ii) requires evaluation of the feasibility of alternatives to the proposed treatment system. The township evaluated alternatives to the proposed system in accordance with this rule and have met the requirements listed therein.

Data Concerns

- *Is the DEQ relying only or primarily on data provided by the engineer and Township? If so, given problems in Traverse City, Solon Township, and Mancelona as well as differences in projected water usage versus metered usage, would the DEQ consider doing research and developing its own numbers?*

  The DEQ does not have sufficient staff or funding to collect its own data and perform its own research to independently verify all information submitted with the application. As in most environmental permit applications, the DEQ relies on information submitted by the applicant.

  The DEQ thoroughly reviews all technical documents and other submittals by the applicant and their consultants to assure accuracy and technical soundness. The DEQ reviews all work plans for completion of the environmental studies, such as hydrogeological studies, associated with the applications and these plans are approved by the DEQ prior to the work being initiated. The DEQ also thoroughly reviews the results of these studies. The reviews are conducted by the DEQ's own experts, including geologists, soil scientists, and engineers. Prior to issuance of a permit, the

DEQ is confident that the wastewater treatment system, if properly operated and maintained, is capable of meeting all requirements specified in Parts 31 and 41 of the NREPA.

- *What if data provided by the applicant is wrong? Can I provide additional information?*

  If an applicant knowingly submits false information, they would be in violation of Part 31 of the NREPA. Applicants occasionally supply information that is later determined to be invalid or incorrect. The DEQ evaluates the new information to determine if it materially affects compliance with the terms of the permit. In these instances, the DEQ may modify the permit or require corrective action to address the issue. If you have additional information pertinent to the Groundwater Discharge Permit, please contact Heidi Ziegenmeyer, Permit Coordinator, at 517-290-6283 or ziegenmeyerh@michigan.gov.

- *Why is the information we have different from what is coming from the Health Department? I have information that groundwater will move 5-400 feet per day and I have concerns about 15 parcels with water supply wells on the upper aquifer where the discharge is going.*

  A site specific hydrogeological investigation was completed at the site in 1998 and supplemented in 2012. The investigation met the criteria established in R323.2221 of the Part 22 Rules. The purpose of the study and the intent of R323.2221 is to adequately define the site hydrogeological conditions where the proposed discharge is to occur.

  The results of the hydrogeological investigation showed that the groundwater is flowing Northwest at approximately 2 feet/day. The groundwater flow velocity is calculated in accordance with standard methods by determining the hydraulic conductivity (k) of the saturated soils, multiplying by the hydraulic gradient, and dividing by the effective porosity of the site soils. This method is approved by the DEQ and commonly used to calculate groundwater flow velocities. The value calculated for this site is consistent with other sites with similar hydrogeological conditions.

$$\frac{Hydraulic\ Conductivity(k) \times Hydraulic\ Gradient}{Effective\ Porosity}$$

  The site specific data gathered for this site is as follows:

  Hydraulic Conductivity: estimated at 100 feet/day (the ability of the soil to transmit water)

  Hydraulic Gradient: 0.0049 (change in groundwater elevation over a given distance)

  Effective Porosity: 0.25 (based on the site's soil characteristics)

Therefore, the complete equation to calculate minimum groundwater flow velocity is:

$$\frac{100\ feet/day \times 0.0049}{0.25} = 2\ feet/day$$

- *Did the DEQ receive information showing that the flows to the WWTF would be different in the summer vs the winter (high in summer, low in winter)?*

  Information on the seasonality of flows is not required in the Groundwater Discharge Permit application. Permits are based on maximum daily flows, not fluctuations in flow. Therefore, this information was not required.

  During the Part 41 review, the DEQ requested confirmation that the average daily design flow took into account the seasonal period in the summer when flows would be higher. The Township responded that the design number took into account the seasonal period in the summer. The DEQ is still reviewing winter flows but, with two treatment trains, the facility will have the capability to operate at half capacity or less during the winter.

Location Suitability

- *Is the discharge location suitable for the discharge or was it only chosen because the Township owns it?*

  According to the Soil Survey of Cheboygan County, U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), 1991 (Survey), the soils within the area where the wastewater discharge rapid infiltration basins are located are classified as Rubicon Sand. With regard to suitability of this soil for rapid infiltration, the Survey describes this soil series as consisting of deep, excessively drained, rapidly permeable soil. The minimum reported permeability for the Rubicon soil series is 6.0 inches per hour, or 3.74 gallons/square foot/hour. The Discharge Management Plan (DMP) submitted by the applicant indicates the maximum hydraulic loading rate to the infiltration basins is 25.5 gallons/square foot/day. This rate is based upon 190,000 gallons being applied to one basin with a bottom area of 7,460 square feet. According to the DMP, the average daily discharge volume is expected to be approximately 95,000 gallons which equates to an average hydraulic loading rate of approximately 12.7 gallons/square foot/day. The reported minimum permeability of the soil within the basins is adequate to accommodate the maximum proposed loading rate pursuant to the requirements of the Part 22 Rules. As such, the site appears to be suitable for the proposed discharge, based on the physical characteristics of the soil at the location in relation to the land treatment technology (rapid infiltration) under consideration.

- *Upland location for discharge—concerns regarding runoff to lowland areas/surface waters (rivers, lakes, streams, wetlands).*

  Rule 323.2204(1)(b) of the Part 22 Rules prohibits a discharge from causing runoff to, ponding on, or flooding of adjacent properties. It also prohibits the discharge from causing soil erosion or nuisance conditions. According to information submitted by the applicant, the infiltration basins are to be constructed with walls of compacted soil with 1:4 slopes. The side slopes are to be planted with grass or covered with riprap to prevent erosion. The exterior walls of the basins are to be of adequate height to prevent surface runoff from entering or leaving the site. In addition, as noted above, there is sufficient hydraulic capacity to ensure that the applied wastewater rapidly infiltrates into the ground.

- *Will discharge in that location change the drainage of the area?*

  The proposed discharge is designed to seep into the ground within the rapid infiltration basins. The treated wastewater will migrate downward through the soils and encounter groundwater at a depth of approximately 60 feet below grade. The hydrogeological studies have estimated, using site data, that the discharge will have limited effects on drainage or groundwater flow in the area.

Monitoring

- *Will the depth of the wells be adequate to monitor this project?*

  The monitor wells are set in appropriate locations and depths to effectively monitor the proposed discharge. Monitor wells MW-5 and MW-6 are located within 150 feet downgradient of the proposed discharge. The screens for these wells are set within the upper 10 feet of the first encountered saturated zone (aquifer). Changes in groundwater quality resulting from discharges of wastewater are typically observed in this zone. The locations and depths of these two wells where chosen to effectively monitor the discharge and were based on the results of the Hydrogeological Investigation completed at the site.

WWTF Ownership/Liability

- *Who or what entity will be considered the owner of the sewer system?*

  The permit application lists Tuscarora Township as the owner of the facility.

- *Will the proposed wastewater system be managed by the Township Municipality?*

  Tuscarora Township is listed as the owner of the facility in the application and will be responsible for managing, or hiring an operator to manage, the WWTF.

- *Will the Township be responsible for damages incurred caused by failures or breaches in the sewage system?*

  The Township is responsible for complying with the terms and conditions of the Groundwater Discharge Permit. If the WWTF causes environmental contamination, the DEQ will evaluate the situation and determine appropriate action. For example, if drinking water wells become contaminated, DEQ has in the past required that water wells be replaced by the facility causing the contamination.

  If back-ups or breaches in the sewer system occur, the owner of the system would be responsible to correct the problem. Property damage caused by sewer back-ups or overflows must be addressed in accordance with the Governmental Liability for Negligence Act 170 of 1964. Enforcement of this act is not under DEQ oversight.

- *Will money be budgeted for emergency applications (back-ups, pipe failures, maintenance, etc.)? Who will be paying for the repairs and/or remediation activity (the Special Assessment District, the County, the State)? How much?*

  The Township, as the owner of the facility, is responsible for paying for emergency applications in accordance with the permit. The method and amount of funding any necessary expenditures is decided by the Township. DEQ has no oversight over financial planning for groundwater discharges.

Permit Compliance

- *If the WWTF does not function properly, how many days out of compliance are allowed?*

  Groundwater discharge permits require permittees to report and correct all instances of noncompliance. In addition, the DEQ monitors compliance with the permits via periodic site inspections and review of monitoring records. The DEQ's response to violations of permits may vary depending on the number, duration and severity of the violation, and the permittee's efforts to voluntarily correct the violation.

- *If the plant discharges out of compliance, how long before the plume is detected in groundwater monitor wells?*

  The groundwater monitor wells are located 150 feet downgradient of the discharge location. Groundwater at that site is estimated to travel at 2 feet per day. At that rate, groundwater contamination may be detected approximately 75 days from the date of the non-compliant discharge.

- *What if our water wells are condemned? Who pays?*

  Tuscarora Township, as the owner of the WWTF, is responsible for impacts to water supply wells that are caused by the WWTF. If the WWTF causes contamination to water supply wells, the DEQ may require replacement of water supply wells by the owner of the WWTF.

Drinking Water Wells in Indian River

- *The aquifer that sits directly under the treatment plant location is the main aquifer used by the town for their drinking water. There is no protective clay layer. Very concerned about pollution to water supplies for businesses and residents. Some have shallow wells.*

  The draft permit has limits that meet or exceed Drinking Water standards. Groundwater monitor wells are positioned 150 feet from the discharge location to effectively monitor groundwater quality downgradient from the proposed discharge. Placement at these locations allows for sufficient time to make any necessary changes in the operation or design of the treatment system in the event that the wastewater discharge causes the groundwater quality to approach the discharge quality limits.

- *There are numerous artesian wells in the area that are used for drinking water. Concerned with possible interruption or contamination of these wells. Past roadwork had problems with artesian wells (washing out their work, they plugged some and new ones started up).*

  This proposed site is located on elevated ground and the groundwater beneath the proposed site is not under artesian conditions. The proposed discharge should have no effect on any local artesian conditions or on the water quality of the drinking water wells.

On-site Water Supply Well Variance

- *Is there a variance needed for the on-site water supply well(s)?*

  There is no need for a variance for the location of the on-site water supply well. At one time plans for the water supply well for the WWTF showed the well located at less than the minimum distance from the discharge. However, the well is now planned to be relocated at least 2,000 feet from the discharge, onto property in the industrial park that is also owned by the township. This meets the minimum isolation distances required.

Water Supplies for Properties Adjacent to the Discharge

- *The ability of adjacent properties to have water supply wells.*

  Any water supply wells planned for adjacent properties must be placed at certain minimum isolation distances from the discharge. This issue has been addressed by the Township and the affected adjacent property owners. The Township will install a water supply well at least 2,000 feet from the discharge location. Adjacent property owners whose property is within the minimum isolation distance have the option to connect to the Township's water supply well.

Surface Water Concerns

- *Concerns regarding potential for contamination of surface water*

    - *Will the discharge endanger and/or contaminate surface water (rivers, lakes, streams, wetlands) and animals living there (especially trout streams in the area)?*

      The discharge is located greater than 1,000 feet from surface waters. This distance is expected to provide additional protection to the surface waters due to dilution and dispersion as it migrates within the aquifer. Additionally, R323.2204(2)(e) of the Part 22 Rules requires that the wastewater discharged from the WWTF is consistent with the requirements of the Part 4 Water Quality Standards, R323.1041 to R323.1117. These Standards specify requirements for discharges to surface waters. The Tuscarora Township WWTF's discharge must be consistent with these requirements. The discharge will not be permitted to contaminate the surface water or affect any of the designated uses of the surface waters in the area (which may include swimming, fishing, boating, etc.).

    - *Will there be runoff of sewage into the surface water?*

      Rule 323.2204(1)(b) of Part 22, Groundwater Administrative Rules, promulgated pursuant to Part 31 of the NREPA, prohibits a discharge from causing runoff to, ponding on, or flooding of adjacent properties. To reach a surface water, the discharge would have to flow across adjacent properties and this is not permitted. Additionally, there can be no direct discharge of wastewater to surface waters without first obtaining a National Pollution Discharge Elimination System (NPDES) permit from the DEQ. Based on the location and design of the WWTF, runoff to surface water should not occur.

    - *Will there be sludge in the surface water?*

      Discharge and/or disposal of sludge to surface water is not permitted. The disposal of biosolids is regulated under the Part 24, Land Application of Biosolids, Administrative Rules. Under the terms of the Groundwater Discharge permit, the permittee is required to properly land apply biosolids in accordance with the Part 24 Rules.

    - *What happens if sewage is released to surface water?*

      Sewage is not permitted to be released to the surface water under the Groundwater Discharge permit. This would be a violation of the permit and Part 31 of the NREPA. If this occurred, DEQ staff would review the situation and determine the appropriate course of action in accordance with Part 31 of the NREPA and the Part 22 Rules.

- *Concern regarding pipes being laid under the riverbeds of the Sturgeon and Little Sturgeon Rivers.*

    - *Will the pipes be laid under the rivers?*

      Yes, there is a 2-inch diameter sanitary force main (part of the public sewer system) and a 6-inch diameter sanitary force main (service connection from the state park) under the Sturgeon River along Straits Highway (M-68/US-27) near the state park entrance.

    - *Do they need a permit for this?*

      R281.832, Rule 22(2) of Part 301, Inland Lakes and Streams, of the NREPA, allows pipes that are directionally drilled and meet the requirements of this Rule (including a depth of at least 10 feet below the bottom of the stream) to be installed without a permit. Both force main pipes will be directionally drilled at a depth of 12 feet below the bottom of the Sturgeon River. Therefore no permit under Part 301 will be required for either force main as long as all requirements of Rule 22(2), including minimum depth, are met.

    - *What if there is a failure in the sewer pipeline under the rivers?*

      The owner of the pipeline system is ultimately responsible for failure of their piping. The current design proposes high density polyethylene (HDPE) pipe to be used under the stream. This pipe is required to be heat fused per manufacturer's requirements and installed using directional drilling technology. After installation the force main piping is pressure tested for leakage. This testing provides assurance that the pipe is able to withstand the pressures in the pumping system during operation. In the event of a pipe failure the owner will need to shut down the pump station and repair or replace the force main. The operating pressure in the 2-inch force main will be low (<25 psi) compared to the design rating of the pipe (160 psi).

- *Concerns regarding the plans to run sewer lines near or through a wetland area*

    - *Will the sewer construction run through wetlands? Are these the same areas that people have reported dumping occurring and will that increase the level of contamination?*

      The Part 41 application for sewer construction indicates that the proposed construction activity will not be in a wetland [as defined by 30301(p) of Part 303 of the NREPA, herein referred to as Part 303 Wetlands Protection]. A preliminary review of National Wetland Inventory (NWI) data indicates the presence of wetlands in the vicinity of some of the proposed sewer construction; however, these maps are general in nature and may not accurately identify all

regulated wetlands. An on-site evaluation by a qualified person would be needed to confirm the presence or absence of regulated wetlands. It is the applicant's responsibility to determine whether construction is planned through any regulated wetlands.

DEQ staff has investigated a wetland site in response to a recent complaint regarding dumping in the wetland. It has been confirmed that the construction activities for the proposed WWTF will not occur within the wetland area where people have reported dumping. The sanitary sewer, force main, and pump station are planned to be within the right of way (ROW) of Club Road in the area south of M-68 near the location of Paula's Café. Some grading associated with pump station installation is proposed to be 20 feet to the east of the ROW line on Club Road and approximately 600 feet south of the centerline of M-68. There is also sewer construction planned for east of Club Road, parallel to and 100 feet south of M-68, toward the I-75 freeway. These are areas outside of the wetland.

- *Will they need a permit to construct through the wetlands? Can we comment on that permit? (Contact information)*

  A permit would be required under Part 303, Wetlands Protection, if it is determined that the construction would impact regulated wetlands. Mr. Scott Rasmusson is the DEQ contact person for wetland issues in this area (989-705-3437).

- *What if there is a failure in the sewer line in these areas, particularly in areas where there may be marl?*

  The owner of the pipeline system is ultimately responsible for the failure of their piping. Sewer construction in areas found to have unstable soils will require special foundation material to provide adequate support for the pipe in accordance with applicable pipeline design and construction standards. All sanitary sewers are required to be tested for leakage and deflection and are televised (evaluated with a special type of mobile camera inserted inside the pipe) to identify any potential problems before being put into service. In the event that there is a failure in the sewer line the owner will need to repair or replace the sewer.

- *Is there a guarantee that this will not affect the Sturgeon River?*

  The DEQ cannot guarantee that surface waters in the area will not be affected by the WWTF. However, based on all available information and the recommendations of its experts, the DEQ does not believe the discharge from the WWTF will affect the Sturgeon River if it is properly operated and maintained in accordance with Part 31 and 41 of the NREPA and the corresponding permits. If such impacts were to occur, the permittee would be required to take all necessary actions to address the impacts.

Landfill Concerns

- *Where is the discharge in proximity to an old, unlined dump site nearby?*

  The unlined dump is located approximately ¾ mile south of the proposed discharge location.

- *Will the discharge disturb and/or flush out contaminants from the landfill and send them toward the drinking water in town?*

  The discharge will have no effect on any potential contaminates originating from the old dump. Groundwater in the vicinity of the proposed discharge location flows in a northwesterly direction, away from the old dump location. Groundwater samples from the monitor wells for parameters that may be associated with a dump revealed that the groundwater beneath the proposed site is clean and not impacted by the dump.

- *Will the monitor wells be drilled through the dump materials and contaminate the aquifer?*

  The dump is located ¾ mile south of the proposed discharge site. No monitor wells are proposed to be drilled near the dump**.**

- *Will the monitor wells for the WWTF be tainted by the dump site? If they are, will the township receive violations or fines if the monitoring reports show elevated levels due to the dump site?*

  Groundwater samples from the existing monitor wells at the site indicate the groundwater is clean and not impacted from any leakage from the old dump.

- *Is any of the sewer piping/construction occurring on the unlined landfill area?*

  No wastewater system construction is proposed in the landfill area. The landfill as identified on the Northeast Michigan Council of Governments map is at least ¾ of a mile to the south of the treatment plant site and not nearby any proposed construction related to this project.

Concerns Regarding WWTF Specifications and Engineering

- *How many sewer lines will be run?*

  According to the Part 41 application there will be approximately 25,500 feet of 8-inch gravity sanitary sewer lines. Additionally there will be approximately 2,500 feet of 2-inch and 3-inch sanitary force main and approximately 5,300 feet of 6-inch and 8-inch sanitary force main.

- *What is the size of the force main?*

  The sizes of the proposed force mains are 2-inch, 3-inch, 6-inch, and 8-inch.

- *Is the sizing of the force main adequate? Should it be 10 to 12 inches?*

  The proposed 6-inch size force main is adequate for the proposed discharge rate from the pump station for the 20-year design period in the basis of design. Oversizing the force main would result in lower velocities (below the design standard of 2 feet/second) and may result in solids accumulating in the pipe requiring additional maintenance. In addition, oversizing the force main can lead to longer detention times in the pipe, which often generates odors as well as corrosive and toxic gases at the discharge site. If the design indicated future flows may be beyond the capability of the current proposed pipe size it would be prudent to reexamine the hydraulics of the pumping system and determine if a larger size is warranted.

- *Will storm water and sanitary wastewater run in the same sewer lines?*

  No. Many municipalities in Michigan have combined sewers that carry both storm water and sanitary wastewater. During heavy rainfall or snowmelt combined sewers can become overloaded, causing combined sewer overflows (CSOs) to occur. However, current design standards do not allow construction of combined sewer systems. Tuscarora Township will have a separate sanitary wastewater system.

- *What is a 20 year design?*

  A 20 year design indicates the time period that the proposed system will have the capacity for the demand in the service area taking into account current and future conditions.

- *Is the burial depth of the piping adequate for passing under a four-lane highway?*

  The burial depth of the force main below the I-75 freeway is between 8 to 12 feet. This exceeds the typical standard depth, which is typically 4 to 6 feet. The Michigan Department of Transportation may need to review the proposed crossing to determine if this depth is sufficient.

- *Should triple-wall pipe be used near sources of water or wetlands?*

  There is no requirement for triple-wall pipe for sanitary sewers near sources of water or wetlands. Depending on the situation, a casing pipe and carrier pipe system can be used where the minimum standard isolation distance to a drinking water system cannot be met.

- *Concerns regarding pumping wastewater up to the site*

    - *If there is a failure in the system and a back-up occurs, what will happen to those homes and businesses?*

      The owner of the sewer system is responsible for designing, operating, and maintaining the system such that there are no sanitary sewer overflows (SSOs) or back-ups and that the treatment system meets the requirements of the Groundwater Discharge permit. The owner of the wastewater system will need to address failures in the system in a timely manner so as not to disrupt service to homes and businesses. Gravity sewers typically operate with minimal attention and normally should not have problems with back-ups, especially new systems without significant sources of inflow and infiltration of water from outside the system. Pump stations are designed with redundant pumps to maintain service with the largest unit out of operation. Alarm systems are also required at pump stations to alert personnel in the event that there is an operational problem. Further, each pump station is equipped with an auxiliary pump connection and portable generator connection in the event that emergency operation is required.

    - *If there is a failure in the system and a back-up occurs, who is responsible for damage to surface waters or the drinking water supply? What can be done?*

      The owner of the system is ultimately responsible for impacts to waters of the state resulting from failures and back-ups. Redundancy is required for essential components of the wastewater system such as pumps and treatment processes where failure would result in a bypass of the system or a SSO. If a SSO does occur, the owner of the system will be responsible to correct the problem and eliminate the overflow. The situation that led to the overflow and the impact from the overflow would need to be evaluated by the DEQ to determine if further corrective action is necessary.

- *Concerns regarding overestimation of water inflow to the plant.*

    - *How can you guarantee the estimates for proposed sewer wastewater discharge are accurate when only a few buildings in town have meters to estimate water usage?*

      When actual flow records are not available, wastewater flows are estimated based on an analysis of data from similar types of establishments. There are many reference materials available to the designer, which are used along with site-specific information to estimate flow numbers.

    - *Will this cause solids associated with sanitary waste to build-up?*

      Although we do not believe this to be the case, even if flows were overestimated, this would not change the selected sewer size of 8-inch, as this is the minimum size for gravity public sanitary sewers. Further, design standards require that

sanitary sewers be installed at minimum slopes to provide self-cleansing velocities to minimize any solids accumulation in the system. At the 20-year design flow rates, the 8-inch sewer size is acceptable. Upper reaches in the sewer system with less flow may exhibit solids accumulation due to lower velocities but that could be expected in any sewer system. In the winter, flows will be reduced because of the seasonal nature of the community, which could also cause some solids buildup. The sewer owner may need to inspect upper reaches of the sewer system periodically to evaluate any maintenance issues and where problems are identified a cleaning schedule may need to be implemented to periodically clean and flush problem areas.

- *Will the WWTF function properly?*

  The treatment facility is sized to treat an average day flow of 95,000 gallons per day. During the early years of operation it is common for actual flows to be less than the design flow because of reserve capacity in the system for future growth and vacant property. The proposed system is designed to have the capability to adequately treat the raw wastewater at the expected flow rates. During these early years of operation plant personnel may need to pay close attention to the biological treatment processes during low flows, although base flows in the system should allow the treatment facility to function properly because of the redundant design of the system. (See paragraph on “reduced winter inflows” below for further discussion).

- *How will reduced winter inflows affect the plant’s functionality?*

  The wastewater treatment facility is designed as two separate treatment trains in parallel, each equivalent to half the total capacity of the system. In the winter when flows are expected to be lower only one treatment train may be needed. As flows increase in the summer the additional treatment train is available for the additional flows. Also during the winter the operator will need to pay close attention to the operating parameters for the treatment system and ensure that the biomass (organisms used to break down waste material) and the loading (sewage) in the system are adequate to maintain treatment efficiency when flows and temperatures are expected to be lower.

- *In winter with low temperatures and low flows, will there be sloughing?*

  Sloughing is usually a term used to describe the excess biomass that comes off of a fixed film media treatment system such as a tricking filter. The proposed system for Tuscarora Township is an activated sludge treatment system classified as a suspended growth biological process, not a fixed film process.

- *Was there a variance requested for holding ponds to be moved closer together? Any other variance in the design? Are guidelines being followed properly?*

  There are no holding ponds proposed for this project. Rapid infiltration basins are used for disposal of the treated wastewater. These basins have not received any variance regarding their location.

  The proposed system is reviewed to determine if design standards are being met. The DEQ provided a number of comments to the Township's consultants regarding the design of the project for the Part 41 Construction Permit. Some of these comments are still being reviewed and have not yet been resolved but we expect these to be adequately addressed before a Construction Permit is issued. However, not every aspect of a proposed design may fit within a current standard. In those situations, best professional judgment of the design engineer and the DEQ reviewer is necessary to determine if the proposed facilities will meet the intent of the design standard or if the design standard is necessary for the proposed facility.

  "Recommended Standards for Wastewater Facilities" 2004 Edition is the design standard that is used to evaluate the proposed design. When warranted best professional judgment is used to determine if a particular standard is appropriate for the situation. Again the design is being reviewed in order to ensure that the system meets design standards.

- *What is the likelihood of an overflow occurring?*

  The likelihood of an overflow occurring is difficult to calculate because it is dependent on many factors, including how well the system is operated and maintained. New sanitary sewer and pump station systems are designed to operate reliably to maintain continuity of service in order to minimize the likelihood of an overflow occurring. Gravity sewers typically operate with minimal attention and normally should not have problems with back-ups, especially new systems without significant sources of inflow and infiltration of water from outside of the system. Pump stations are designed with redundant pumps, alarm systems, and emergency operating capability.

- *Where is the emergency basin for this system?*

  Emergency storage basins are not required for new systems. There may be some existing systems that have emergency basins to compensate for some design deficiency that was not addressed in the original design or was not a requirement when the system was originally constructed.

- *What if the facility wants to expand to 600,000 GPD? Is there room? Should they have picked a different location?*

  If the facility wishes to expand the WWTF and/or discharge a greater volume of water than what is in their current Groundwater Discharge Permit, the facility must apply to the DEQ for the additional construction and/or discharge volume. DEQ staff will review the application and determine whether the addition can be approved.

  The soil within the proposed rapid infiltration basins was classified by the NRCS as Rubicon Sand, which is highly permeable and excessively drained. With modification to the facility's DMP, the infiltration beds would likely be able to handle a higher hydraulic load than is currently proposed. The soil conditions at the site are well suited for the proposed discharge method. Additionally, the design consultant has indicated that there is room on the site to the north and east to expand the current proposed treatment system.

- *Is the equipment they propose to use of low quality?*

  The equipment proposed will be provided by Aero-Mod, Inc. This company is located in Manhattan, Kansas and their equipment is reportedly made in the USA. The company also claims that their systems are low maintenance and made from components such as stainless steel and fiberglass. We are not aware of any reports that indicate their equipment is low quality.

Locally Decided Issues

There were several questions raised during the public notice period and the public meeting that pertain to issues not under the purview of the DEQ. Below are a few comments on these issues.

- *Project Necessity*

  The decision to pursue construction of a WWTF in Tuscarora Township was a local one. The DEQ did not require construction of a WWTF, but the WWTF is expected to provide environmental benefits to the area. The wastewater will be pumped to the discharge site in an area farther away from the surface waters than current emissions from septic tanks and drainfields. Additionally, wastewater will be treated to more stringent effluent criteria than what is currently being emitted by existing septic tanks and drainage fields.

  The DEQ is not aware of any studies of the relationship between water quality and septic systems in Indian River. Our statements are based on our knowledge of emissions from existing septic systems in general, throughout Michigan, not on data specific to Indian River.

- *Project Cost*

  The DEQ does not have regulatory oversight over project costs or the extent to which a local government may assess taxes on residents to pay for a project.

- *Special Assessment District (SAD) Delineation*

  The scope of the SAD, whether a home or business must connect to the sewer, or how much each person in the SAD must contribute financially to the project are local issues. The DEQ was not involved in these decisions.

- *Efficacy of Small Sewage Treatment Systems*

  This type of WWTF is not new to Michigan and is a commonly used technology that when operated properly should meet the requirements of the Part 22 Rules.

- *Choice of Consultants*

  Permit applicants are free to choose the consultant they believe will best suit their needs. Though residents in the Township may not agree with the Township's choice of consultant, this is a locally-decided issue.